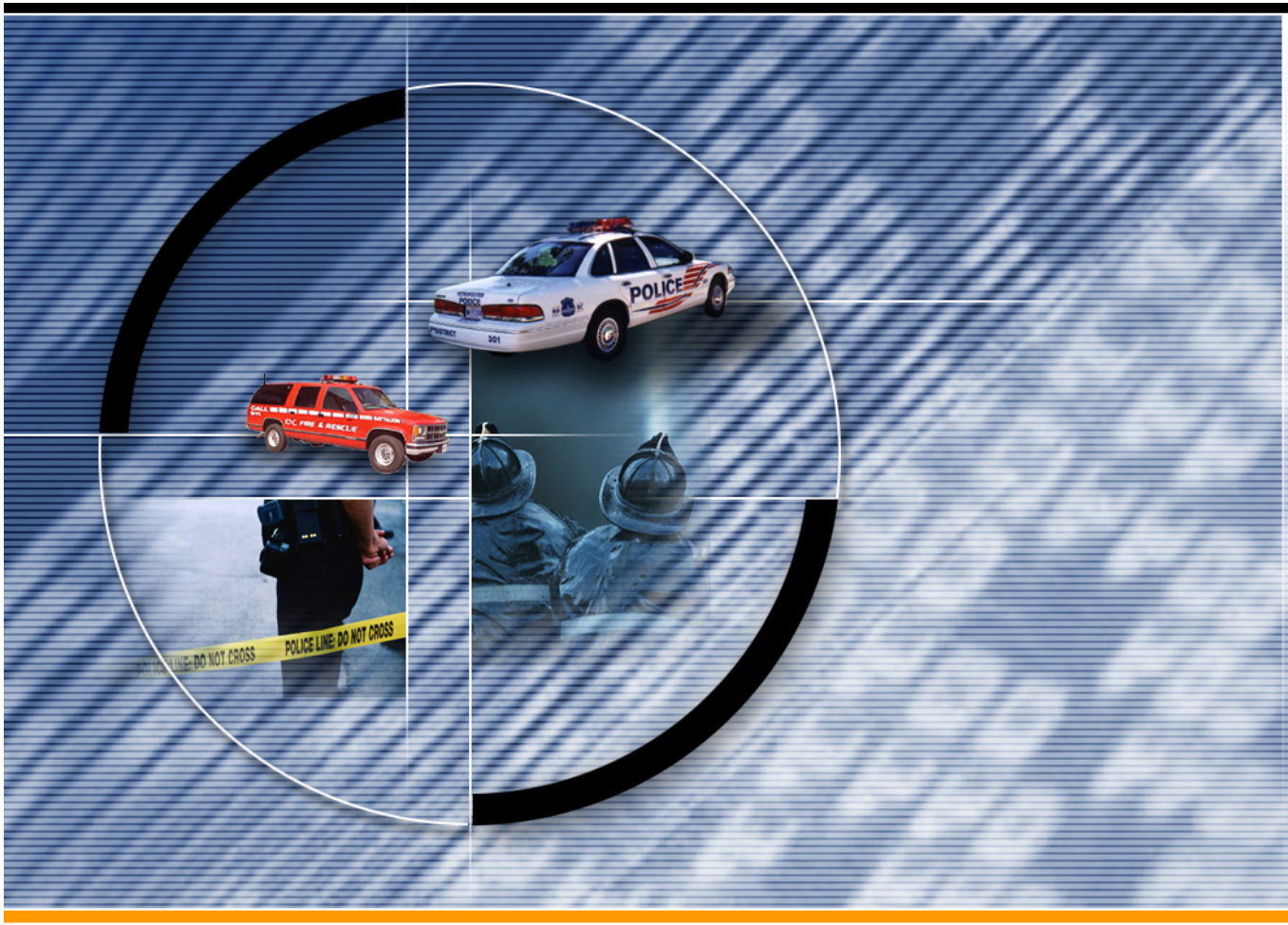


Public Safety Wireless Communications

Presented
to

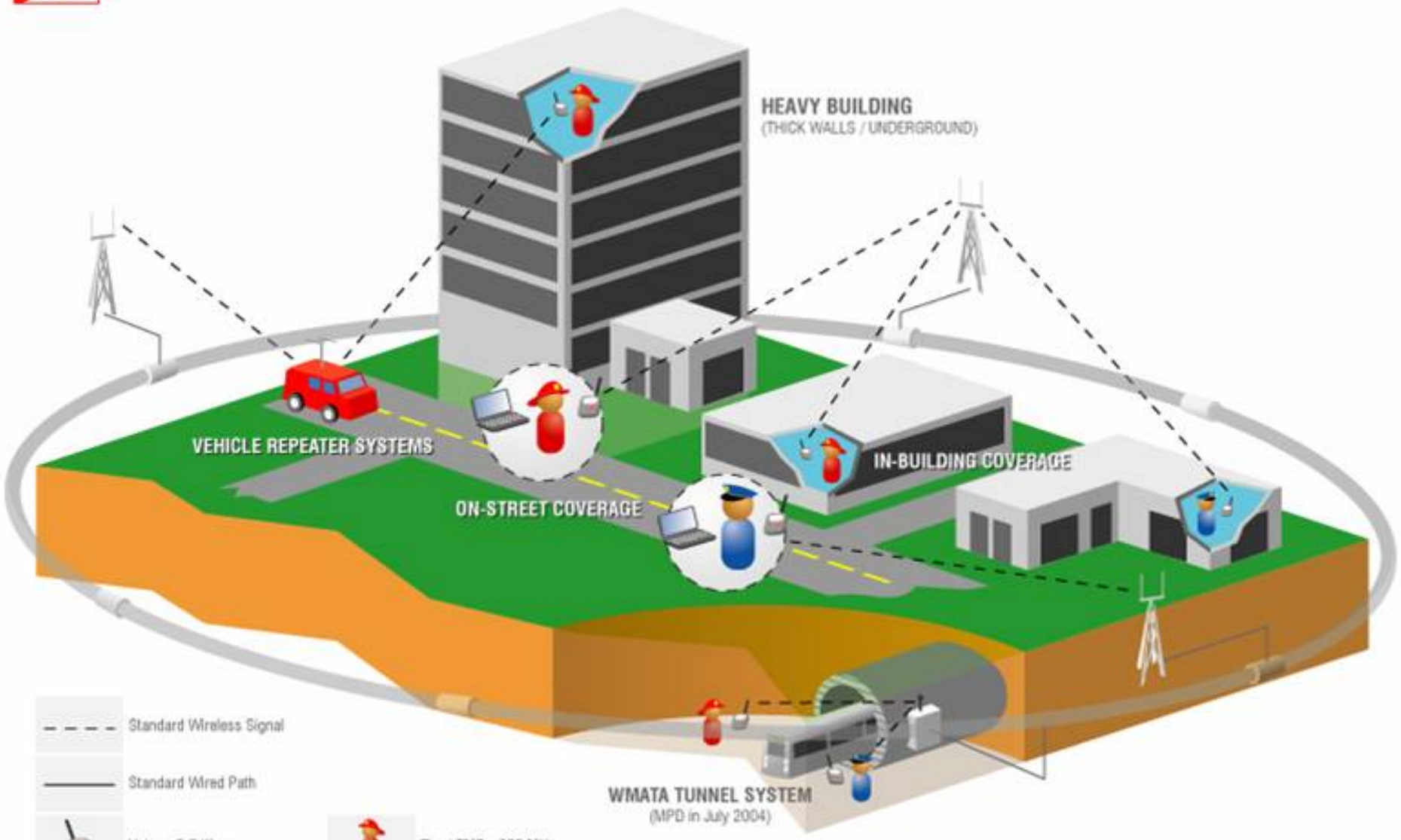
Ms. Angela Giancarlo,
Associate Chief,
Public Safety & Critical Infrastructure Division
Wireless Telecommunications Bureau

03 November 2005

PUBLIC SAFETY : HIGH SPEED WIRELESS DATA

SPECTRUM COALITION FOR PUBLIC SAFETY

Public Safety Wireless Voice and Data Communications



3D.v.5b - 061404

Regional Public Safety Wireless Communications Interoperability

Group 1 (800 MHz Moto)

Metro Airport Authority
Fairfax County PD
Fairfax County FD
Alexandria PD
Alexandria FD
Arlington PD
Montgomery County PD
Montgomery County FD
DC FD

Group 2 (460 MHz Moto)

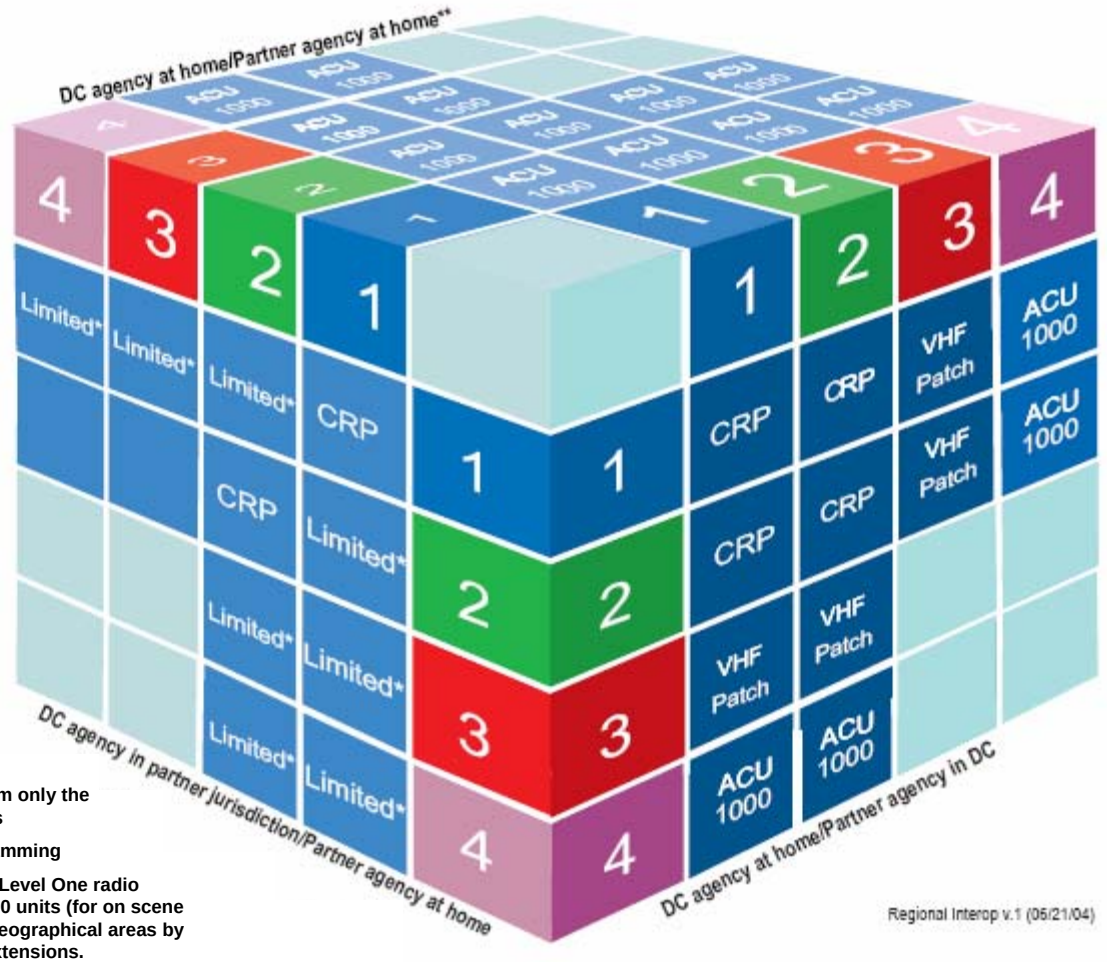
DC PD
WMATA

Group 3 (Federal VHF)

ATF
US Fed. Protective Svcs
US Capitol Police
FBI
US Park Police
US Secret Service
US Marshals Service

Group 4 (Other)

Prince Geo. County PD
Prince Geo. County FD
MD State Police
VA State Police



Note:

- **Provides interoperability from only the DC Public Safety perspectives**

- **CRP: Common Radio Programming**

*** Interoperability provided by Level One radio distributions, mobile ACU 1000 units (for on scene interoperability), or in some geographical areas by DC radio network coverage extensions.**

**** Some areas may have radio network coverage that enables Common Radio Programming interoperability**

Broadband Wireless Data: Overview

- **Broadband wireless data networks can provide critical public safety and homeland security applications to first responders and commanders.**
- **The current Public Safety spectrum allocations do not enable the deployment of broadband networks and applications.**
- **Further delays in clearing analog TV broadcasts from the 700 MHz spectrum and the Congressionally mandated plans to auction the spectrum will prevent public safety from building the tools needed to better defend our country.**
- **We must act now or risk losing the needed bandwidth forever.**

First responders need better tools than the terrorists!

2 Minute Video Presentation

Visit www.spectrumcoalition.org

Pilot Network Users and Statistics

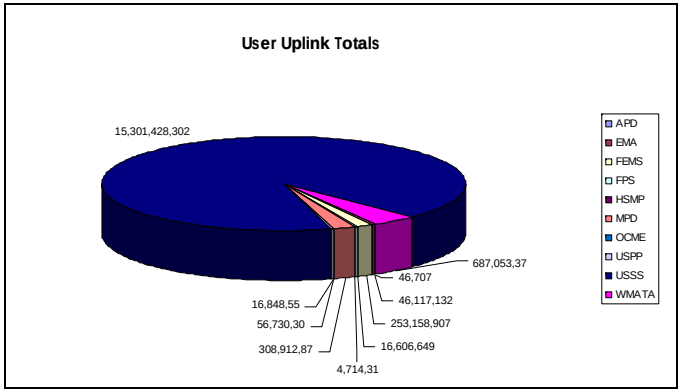
USERS

- Alexandria VA Police Department
- DC Department of Corrections
- DC Department of Transportation
- DC Deputy Mayor, Children, Youth, Families and Elders
- DC Emergency Management Agency
- DC Fire and Emergency Medical Service
- DC Metropolitan Police Department
- DC Office of the Chief Medical Examiner
- Department of Homeland Security
- DC Hazardous Material First Responders
- U. S. Federal Protective Service
- U. S. Park Police
- U. S. Secret Service
- Washington Metropolitan Transit Authority
- Yellow School Bus Security program

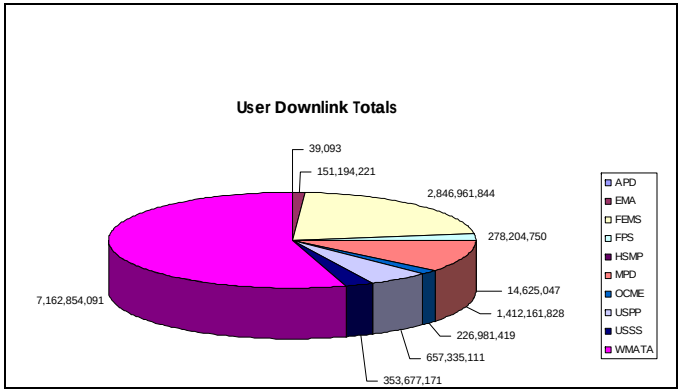
APPLICATIONS/USES

- CapWIN
- Case Management Systems
- Cobra
- Email
- FACTS
- Greenhouse Video Surveillance
- HSMP Portal
- I/Netviewer
- Justis
- LiveWave Video Surveillance
- Protect (CBEMIS)
- SunPro
- Traffic Land
- Videonext Video Surveillance

Up Link



Down Link



SPECTRUM COALITION FOR PUBLIC SAFETY

www.spectrumcoalition.org

SPECTRUM COALITION MEMBERS

Broward County, FL
California Highway Patrol
CapWin
City of Denver
City of Los Angeles
City of Philadelphia
City of Phoenix
City of San Diego
Fairfax County, VA
Los Angeles County Sheriff's Department
Metro Transit Police Dept. (WMATA)
Montgomery County, MD
Pinellas County, FL
Region 25 (Montana)
Rocky Mountain EDACS User Group
- Arvada, CO
- Aurora, CO
- Denver International Airport
- Lakewood, CO
- Rocky Flats, CO
- Westminster, CO
- W. Metro Fire District, CO

San Mateo County, CA
State of Arizona
State of Delaware
State of Ohio
State of Ohio SIEC
State of Oregon SIEC
State of Rhode Island
State of Texas
State of Washington SIEC
U.S. Park Police
Washington, DC

SPECTRUM COALITION SUPPORTING ORGANIZATIONS

Association of Public-Safety Communications Officials-International, Inc. (APCO)
International Association of Fire Chiefs, Inc. (IAFC)
International Municipal Signal Association (IMSA)
International Association of Chiefs of Police (IACP)
Major Cities Chiefs Association (MCCA)
National Sheriff's Association (NSA)
Major County Sheriff's Association (MCSA)
National Public Safety Telecommunications Council (NPSTC)
Public Technology Institute (PTI)

Legislative Goals & Status - 1

- **Goals:**
  - Pursue legislation requiring the FCC to reserve additional spectrum in the 700 band for public safety broadband wireless
  - Clear TV broadcasters by 12/31/07
  - Enable technologies that meet first response requirements and are competitive and affordable
  - Facilitate nationwide deployment
- **Public Safety Spectrum Legislative Status:**
  - Background
    - Senators McCain/Lieberman introduces and amendment to the Intelligence Reform and Terrorism Prevention Act of 2004.
    - This Act mandates a one year study conducted by the FCC, NTIA, DHS and state and local organizations on the spectrum and broadband wireless needs of Public Safety for the next 10 years.
    - We are thrilled that both Houses of Congress are working hard to establish a “date certain”.
    - Possibility of additional Public Safety spectrum is directly tied to several issues
      - Digital Television Transition
        - » Provision for Government provided set-top D-to-A converter boxes
        - » Consumer education about the impending cessation of analog broadcasting
      - Spectrum Auctions
        - » Designed specifically to raise money to facilitate federal debt reduction

Legislative Goals & Status - 2

- **Current Public Safety Spectrum Legislative Status:**
  - In the Senate
    - On October 20, 2005 the Senate Commerce Committee approved the Stevens/Inouye "Digital Transition and Public Safety Act of 2005" as part of the Budget Reconciliation package (19-3 vote).
    - Sets a hard deadline for the digital transition of April 7, 2009.
    - Establishes the "Digital Transition and Public Safety Fund" funded with spectrum auction revenues
      - Authorized to fund various programs including the converter box subsidy program and state and local interoperability grants.
    - Senate Budget Committee marked-up the spending reconciliation package on October 26, 2005.
    - On November 3rd, 2005, OMB advised that they are looking for a larger percentage of spectrum revenue to be used for debt reduction.
  - In the House of Representatives
    - DTV Transition bill has been approved.
    - Sets a hard deadline for the digital transition for December 31, 2008.
    - Authorizes funds from the spectrum auction for a converter subsidy box program and a consumer education program.
    - House Budget Committee is expected to mark up the spending reconciliation package.
    - Final passage of the conciliation package is expected to be complete before Thanksgiving.

SPECTRUM COALITION FOR PUBLIC SAFETY

Summary of White Paper

- Significant demand for Broadband exists and is growing. Have identified current applications that need:
  - 1.8 Mbps per user
  - 3 Mbps per sector for single incident
  - 12.5 Mbps per site for multiple incidents – drives spectrum need.
- Required Spectrum Required for Public Safety is 30 MHz
  - 25 MHz for interoperable Public Safety systems
    - Estimated demand of 12.5 Mbps with 1.2 bp/Hz results in 25 MHz paired
  - 2.5 MHz for Vehicular Repeaters – for in-building coverage
  - 2.5 MHz for Peer-to-peer use – where no other solution is available
- Because of propagation characteristics, upper 700 MHz bandwidth is ideal for cost effective, interoperable public safety networks. 37,000 sites at 4.9 GHz to cover National Capitol Region is not feasible!
  - Requires no more than 120 sites at 700 MHz

Live Demonstration

Visit www.spectrumcoalition.org

The National Capitol Region is planning to deploy NOW

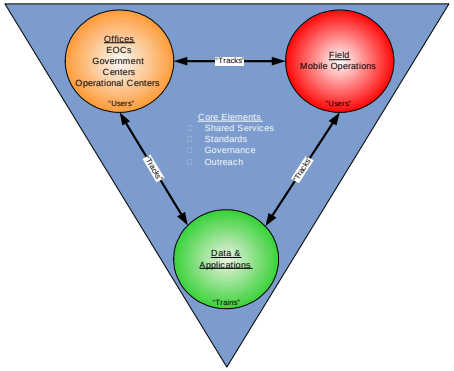
- ***We are working together to plan, design and deploy a regional broadband wireless interoperable network of networks. Deployment is scheduled to start in June 06.***

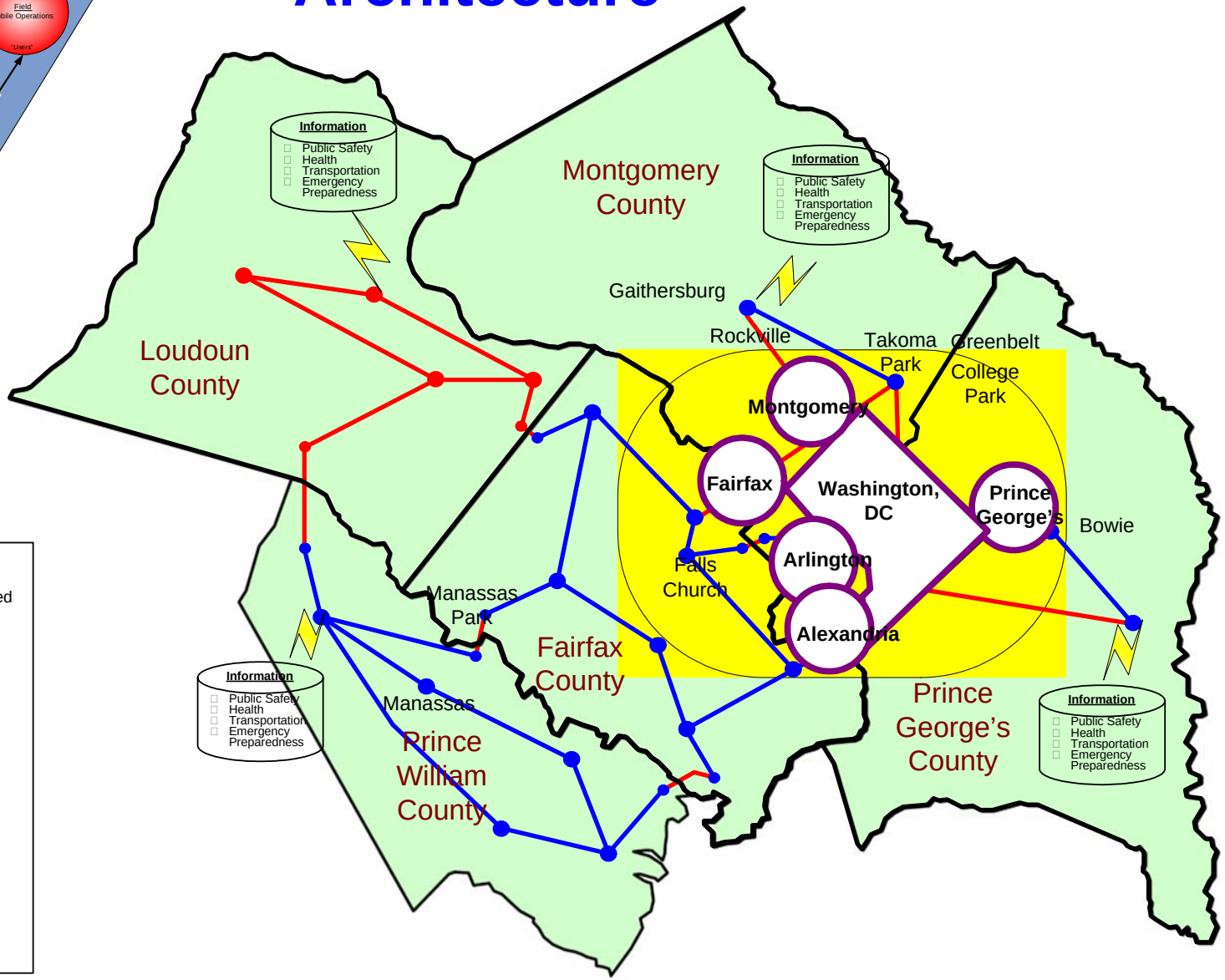
- ***We are working with broadcasters in the region to free the 700Mhz band by accelerating their move to digital channels -- the NCR is a logical pilot for the DTV transition.***

- ***There is a place for commercial carriers and broadband wireless providers in helping Public Safety protect the Nation. Not only by leveraging their technological advancements but also utilizing their networks if and when ours are unavailable.***

- ***Our planned design will provide a model that can be repeated through the Nation and will create interoperable networks from the Atlantic to the Pacific.***

NCR Data Interoperability Communications Architecture

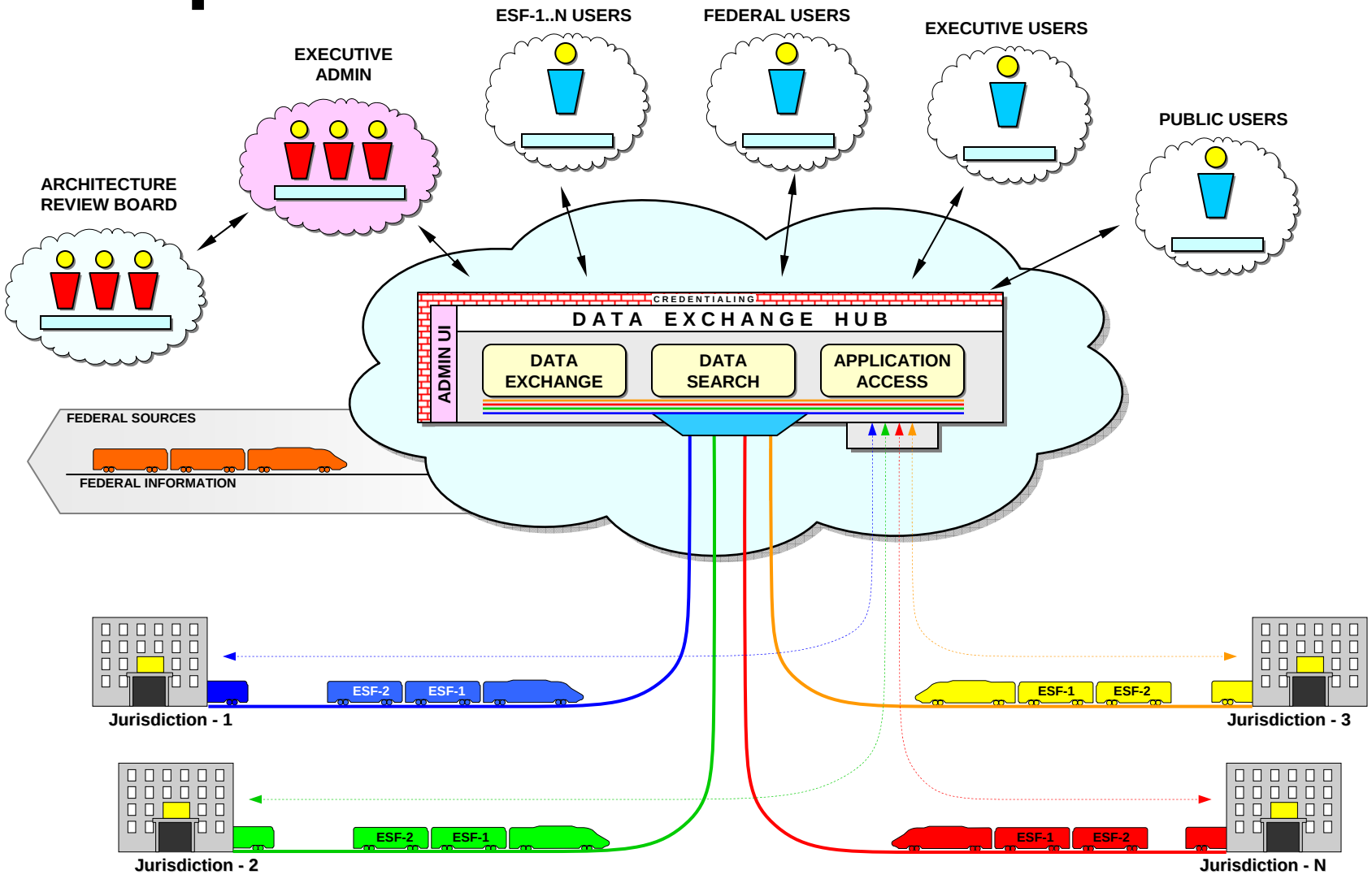




LEGEND

- Existing Fiber Connected I-Net Site or Hub
- Candidate I-Net Site
- Existing I-Net Fiber
- Candidate I-Net Fiber
- Broadband Wireless Phase 1
- Broadband Wireless Phase 2
- Information
- Broadband Wireless Future Phases

Data Exchange Hub Concept of Operations



NCR Program Deliverables

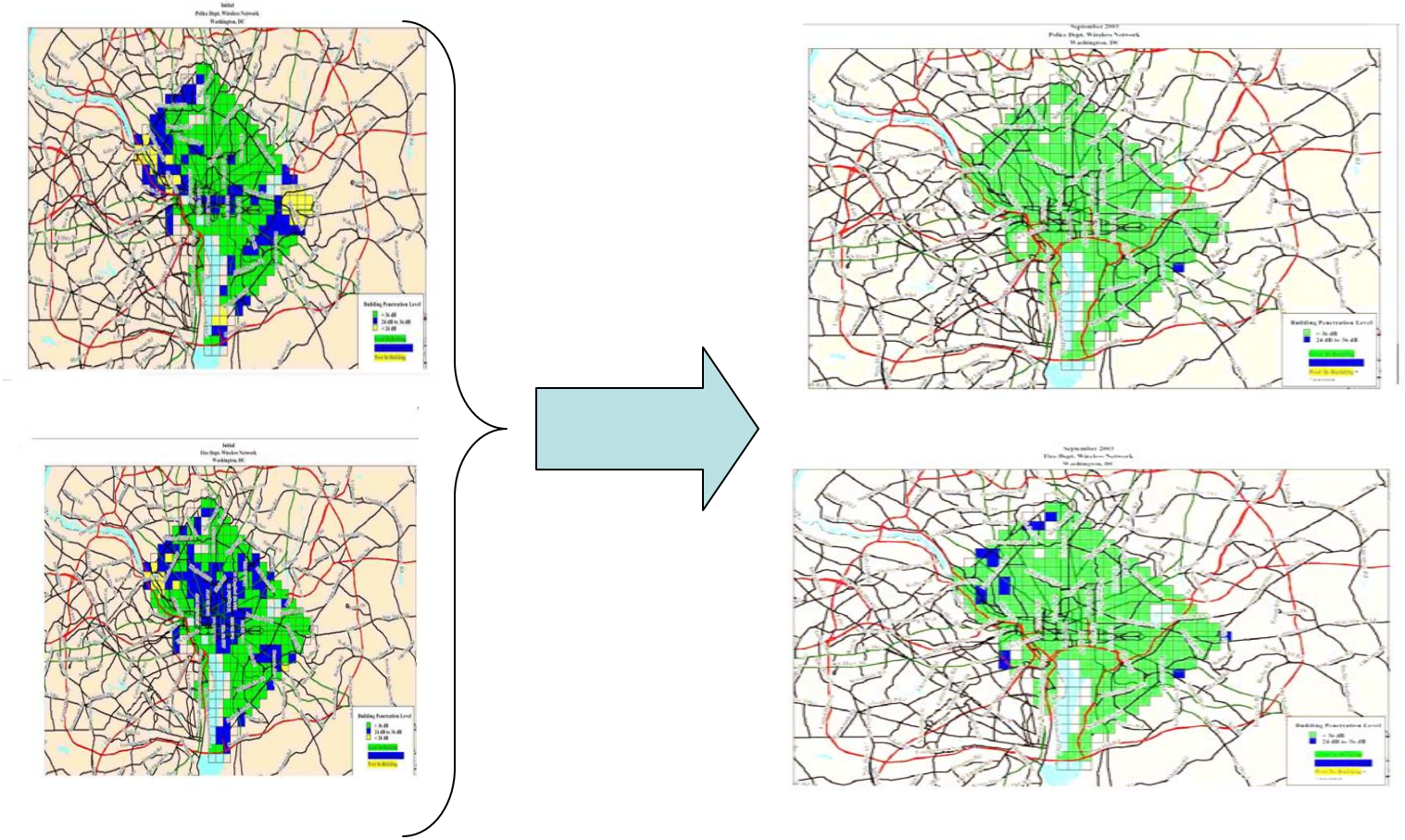
Pilot Objectives: Leverage existing technologies to better define long term solutions.

I-Net Project	BB Project	EOC Int Project	DEH Project
High level Pilot plans Light up at least 4 regional fiber connections (Locations TBD)	**High level Pilot plans** External to District Pilots, but interoperable to DC • 1x EVDO –RE-A • WI MAX • 4.9 GHz • WI FI • Flarion • Mesh	**High level Pilot plans** • Web EOC to Web EOC Pilot • Web EOC to/from other CIMS (DC-Montgomery) • Federal (TBD) • Web EOC to/from DEH	**High level Tech assessments** Tech Assessment of Existing Solutions • CAPWIN • CAP STAT • HSIN • SHIELD • Research Other Options
NCR Requirements Efforts	Requirements and design SOW Awarded	Requirements and design SOW Awarded	Req. RFP Due out 9-10	Awarded → **Dec. '05**
NCR Design Effort		Design SOW TBD. Depends on completion of requirements work	Design SOW TBD Depends on completion of requirements

Appendix

District of Columbia Radio Coverage Improvement

- **Coverage Improvements At 460 and 800 MHz**



- **Basic coverage, or operability, is a critical component of interoperability**

Interoperability Program summary

Interoperability Imperatives	Task Description	Project Benefit to the National Capital Region	
Offices Operational Centers	Connect Emergency Operations Center s(EOCs). Leverage existing off-the-shelf solutions to seamlessly integrate the Emergency Operations Centers. Select a jurisdiction to develop a pilot application and serve as an NCR model. This will facilitate testing and validation of the EOC interoperability solution	This integration will allow for increased coordination, faster regional response times , and backup in case of system failure or center outages.	
Field Mobile Operations	Design and procure the physical pathways (I-Net) necessary for interconnection among regional public network. Engineer and procure an integrated solution for interoperable interconnection. Develop pilot application for incident command and control management and sharing o public safety resources related to E9-1-1, and protocols for interoperating in a regional crisis.	Specific benefits of private network interconnections (I-Nets) include the ability to interconnect the region's 9-1-1 Centers, and to create an interoperable regional communications fabric supporting public safety broadband wireless systems.	
Field Mobile Operations	Design a regional interoperable /interconnected broadband wireless network providing outdoor coverage for the NCR. Collect NCR first responder broadband application security, functional and performance requirements.	A regional wireless broadband network will significantly enhance first responder communication capabilities, and will provide the infrastructure to enable true voice/data interoperability via voice over IP technology.	
Data & Applications	Deploy a high performance search capability (neutral host) to allow authorized users access to data housed in individual jurisditions' locations. This functionality will be available to any browser-based user whether connected throught eh Internet (VPN), or through a browser-compatible wireless service. A centrlized security model will insure authorized access. All data will remain under the administrative and technical control fo the owner jurisdiction	By allowing real-time electronic exchange of data for public safety, emergency preparedness officials at all levels should realize immediate improvements and cost reductions in Homeland Security data communication activities.	